

Abstract:

Newly developed seedless watermelon cultivars (e.g. *Citrullus lanatus* Thunb. cv. Reina de Corazones) are being introduced into the European market, with great success. In some cases, internal creases, an/or large voids appear in a very variable number of fruits, a defect that greatly deteriorates the product. The aim of this project was to develop a technic for non-destructive detection of this defect in individual fruits, based on acoustic impact response. A device made up mainly by a microphone, structural elements and a mechanical impact generator was designed and tested. Seedless watermelons with and without hollow heart from Valencia and Almería, were measured by the acoustic device. Spectral parameters were examined as potential non-destructive predictors of internal disorders. Resonant frequencies recorded with the set-up were not significantly correlated with the hollow heart presence in watermelon. BM (band magnitude) parameters, obtained by summing the magnitude of the spectrum between a specified band width, were the acoustic parameters with the higher correlation with hollow volume (0.62-0.67). A breakdown and one-way ANOVA analysis showed the BM that was the better predictor for the internal voids. BM values increase when internal voids appear in watermelons. Percentages of approximately a 80% of well classified were obtained applying a criterium based on these parameters.